

## **REMARKS**

### **Introduction**

Applicants note the restriction and constructive election of claim 27, which has been withdrawn from consideration. Claims 1 to 26 are therefore currently pending. Applicants request reconsideration of the patentability of the pending claims in view of the following discussion.

### **Final Rejection of Claims 1-10 and 13-26 under 35 U.S.C. §102(e)**

Claims 1-10 and 13-26 have been finally rejected under 35 U.S.C. §102(e) as anticipated by U.S. Patent No. 6,970,239 to Chan et al. (herein referred to as “Chan”).

Independent claim 1 recites:

- (a) *a substrate . . . with at least one array for capturing a chemical moiety* from a sample solution, and
- (b) *a nanopore system downstream from the substrate for identifying the chemical moiety . . . after the chemical moiety has been released from the array* [emphasis added].

In the Response to Arguments section of the Final Office Action, the Examiner asserts that Applicants have “argued that Chan does not teach that the substrate is present with the nanopore system downstream” and that “[i]t is clear from Chan, Figure 3, that the substrate that identifies the chemical moiety is downstream from the sample inlet channel 320 and the cell 330.” See the Final Office Action, page 4.

To the extent that the assertions of the Final Office Action are understood, they do not indicate how Chan anticipates the subject matter of claim 1. More specifically, Figure 3 of Chan shows an inlet channel (320) that leads downstream to cell (330) that includes metallic nanoparticles (340) and an outlet channel (350) leading downstream from the cell (330). Figure 3 also illustrates a Raman detection unit (360) that is positioned at right angles to the cell (330), neither upstream nor downstream from the cell (330) (with respect to the flow direction of the sample).

Assuming *arguendo*, that the Examiner is equating the cell (330) that includes the metallic nanoparticles (340) with element (a) of claim 1 (the Final Office Action refers to a “metal coated nanocrystalline porous silicon *substrate*”), it is unclear what the Examiner equates with element (b) since Chan does not disclose a nanopore system downstream from the cell (330).

To the extent that the Examiner is relying on the statement in Chan that “the metal-coated porous silicon . . . may be designed as part of an integral chip, connected to various channels, microchannels, nanochannels, [etc.]”, there is no teaching or suggestion that these features are “nanopores”, particularly since a ‘nanochannel’ is not equivalent to a nanopore.

The specification of the inventors’ Application makes this clear as follows:

Typical nanopore systems used with the present invention may comprise and not be limited to devices disclosed and discussed in U.S. Pat. No. 5,795,782, U.S. Pat. No. 6,015,714, WO 01/81896 A1, WO 01/81908 A1 and others. *The nanopore system may employ a pore molecule such as the receptor for bacteriophage lambda (LamB) or alpha-hemolysin, to record the process of biopolymer injection or traversal through the channel pore when that channel has been isolated on a membrane patch or inserted into a synthetic lipid bilayer. The apparatus used for the nanopore system comprises: 1) an ion-conducting pore or channel, perhaps modified to include a linked or fused polymerizing agent; 2) the reagents necessary to construct and produce a linear polymer to be characterized, or the polymerized molecule itself; and 3) an amplifier and recording mechanism to detect changes in conductance of ions across the pore as the polymer traverses its opening.* A variety of electronic devices are available which are sensitive enough to perform the measurements used in the invention, and computer acquisition rates and storage capabilities are adequate for the rapid pace of sequence data accumulation.

(Specification, page 10, line 29 to page 11, line 12)(emphasis added).

In light of the above-quoted disclosure provided by the specification regarding nanopores, it is abundantly clear that the channels mentioned by Chan do not teach or suggest a nanopore system situated downstream from the substrate for identifying the chemical moiety (item (b) of claim 1).

On the other hand, if the Examiner is asserting that the metal-coated nanocrystalline porous silicon substrate within cell (330) comprises a nanopore system and can be equated with item (b), then it is not understood what the Examiner equates with item (a), since cell (330) is not downstream from “a substrate . . . with at least one array for capturing a chemical moiety”.

Applicants therefore emphasize that Chan does not in any way read on or anticipate the subject matter of claim 1 – there is no identical disclosure of both items (a) and (b). Likewise, the Chan reference does not read on or anticipate the features of independent claim 10, which recites features analogous to those recited in independent claim 1.

Withdrawal of the anticipation rejection of independent claim 1 and its dependent claims 2-9 and 13-23 and of independent claim 10, and its dependent claims 24-26, is respectfully requested. To the extent that the Examiner disagrees with the analysis presented above, an interview is expressly requested to discuss the claimed subject matter and the cited references.

**Rejection of Claims 11 and 12 under 35 U.S.C. §103(a)**

Claims 11 and 12 have been rejected under 35 U.S.C. §103(b) as unpatentable over Chan.

Claims 11 and 12 depend from and incorporate the features of independent claim 10. As discussed above, the Chan reference does not disclose or suggest the features of claim 10. Therefore, for at least the same reasons, the Chan reference does not render obvious the features of claims 11 and 12, which are therefore patentable over Chan.

Withdrawal of the obviousness rejection of claims 11 and 12 is therefore requested.

**CONCLUSION**

In view of all the above, it is believed that pending claims 1-26 are in allowable condition. It is therefore respectfully requested that the objections and rejections be withdrawn, and that the present application issue as early as possible.

Respectfully submitted,

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